# Mission Support Alliance

**Statement of Work**

Title: 2750E HVAC Roof Top Unit Replacement
Revision Number: 0
Date: April, 2011

## 1.0 INTRODUCTION / BACKGROUND

The 2750E Office Building in the 200 East Area of the Hanford Site has a 35 year old heating, ventilation and air conditioning (HVAC) system made up of 11 roof top units (RTU). These RTUs have a multitude of non-functioning or poorly performing components resulting in poor air quality, occupant discomfort, inefficient energy use, reliability issues and increasing cost of operations. In order to provide a more comfortable work environment and increase the efficiency of the building, all 11 RTUs will be replaced.

## 2.0 OBJECTIVE

The objective of this SOW is to have a Contractor specify, design, fabricate and deliver 11 RTUs that offer better performance, efficiency and reliability than those currently installed at the 2750E Office Building. The Contractor will also be required to provide technical guidance/oversight of the installation and testing of the RTUs. Removal and replacement of the RTUs will be performed by others.

## 3.0 DESCRIPTION OF WORK – SPECIFIC

**Task 1 –** The Contractor shall identify appropriate replacement units that will directly replace the existing RTUs at the 2750E Office Building. The replacement units shall be complete package units incorporating filters, fans, DX cooling coils, condenser, electric heating coils, duct smoke detectors and integrated controllers. The Contractor shall prepare a specification for the replacement RTUs and schedule for fabrication of 7 RTUs with an option for 4 additional RTUs and provide them to the Buyer or his/her designee.

**Task 2 –** The Contractor shall fabricate and deliver 7 RTUs that comply with the Buyer approved specification and applicable codes and standards. Delivery of the RTUs shall be per the delivery schedule specified in Section 7.1. In addition the Contractor shall make available mounting details to facilitate preparation of curbing and anchorage of replacement RTUs by the Buyer.

**Task 3 –** The Contractor shall oversee installation of the RTUs and provide technical support of mechanical and electrical connections, startup, test operations and verification of airflows/air balance as requested by the Buyer or his/her designee.

**Optional Task 4 –** The Contractor shall complete Task 2 and Task 3 for 4 additional RTUs. The 4 additional RTUs shall be delivered per the schedule specified in Section 7.1 and paid for in Fiscal Year 2012.

## 4.0 REQUIREMENTS

General

For any work performed on the Hanford Site or any MSA controlled facility, the provisions of the On Site Services Provisions, SP-5, will apply to Contractor personnel.

### 4.1 Engineering Requirements

The existing RTUs are Carrier Model 50ME016620YF units, 15 ton capacity with 8 modules. Replacement RTUs shall be equivalent to the existing RTUs as described in the drawings identified below with the following exceptions:

- Night Setback feature will not be required.
- Master control panel will not be used; integrated control panels shall be provided with each RTU.
- Each RTU shall be equipped with a master disconnect that is integrated into the unit.

**REFERENCE DRAWINGS**

| | Number | Title |
|---|---|---|
| 1. | H-2-38901, Rev. 5 | Electrical One Line Diagram and Details |
| 2. | H-2-38912, Rev. 3 | HVAC First Floor Plan |
| 3. | H-2-38913, Rev. 3 | HVAC Second Floor Plan |
| 4. | H-2-38914, Rev. 1 | HVAC Partial Plans & Sections |
| 5. | H-2-38915, Rev. 2 | HVAC Air Flow Diagram & Schedule |
| 6. | H-2-70618, Rev. 2 | HVAC Floor Plans |
| 7. | H-2-70652, Rev. 2 | HVAC-Floor Plans Sections – Sched |
| 8. | H-2-78360, Rev. 0 | HVAC/Electrical Plan & Sections |

**APPLICABLE ENGINEERING CODES AND STANDARDS**

| | Number | Title |
|---|---|---|

| | Number | Title |
|---|---|---|
| 1. | IBC 2009 | International Building Code |
| 2. | NFPA 70 (NEC) | Electrical Components (Must be UL listed) |
| 3. | IMC | International Mechanical Code (Fabrication and Installation) |
| 4. | NEMA (ICS 6) | National Electrical Manufacturers Association (Industrial Control and Systems Enclosures) |
| 5. | WAC (Title 296 Chapter 46B) | Washington Administrative Code (Electrical Safety Standards, Administration, and Installation) |
| 6. | RCW (Title 19 Chapter 28) | Revised Code of Washington (Electricians and Electrical Installations) |

### 4.2 ES&H Requirements

The Contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The Contractor shall comply with, and assist the Contract Specialist in complying with Environmental, Safety, Health, and Quality (ESH&Q) requirements of all applicable laws, regulations and directives.

The Contractor shall exercise a degree of care commensurate with the work and the associated hazards. The Contractor shall ensure that management of ES&H functions and activities is an integral and visible part of the Subcontractor's work planning and execution processes. As a minimum, the Contractor shall:

- Thoroughly review the defined scope of work;
- Identify hazards and ES&H requirements;
- Analyze hazards and implement controls;
- Perform work within controls; and
- Provide feedback on adequacy of controls and continue to improve safety management

The Contractor shall flow down ESH&Q requirements to the lowest tier Subcontractor performing work on the Hanford site commensurate with the risk and complexity of the work.

**APPLICABLE ES&H REQUIREMENTS**

| | Number | Title |
|---|---|---|
| 1. | DOE-0336 | Hanford Site Lock Out/Tag Out |
| 2. | DOE-RL-92-36 | Hanford Site Hoisting and Rigging Manual |
| 3. | MSC-PRO-095 | Scaffolding |

| | | |
|---|---|---|
| 4. | MSC-PRO-37485 | Material Handling & Control of Loads |
| 5. | MSC-PRO-43284 | Fall Protection |
| 6. | MSC-RD-12386 | Subcontractor Safety and Health Management Requirements |

### 4.3 Quality Assurance Requirements

The Contractor shall be responsible for performing quality workmanship and shall conduct the quality control measures necessary to ensure work conforms to requirements.

### 4.4 Government Property

Not applicable

## 5.0 PERSONNEL REQUIREMENTS

### 5.1 Training and Qualifications

Contractor shall ensure that its personnel meet and maintain the appropriate training, qualification and certification requirements. The following types of training qualifications are required:

Required Qualifications:

Personnel performing electrical work shall have certificates of competence required by RCW 19.28.161 and WAC 296-46B-940.

### 5.2 Security and Badging Requirements

For any on site work, see Special Provisions – On Site Services SP-5 for details.

Contractor employees will be required to submit to vehicle searches and not personally carry or transport certain prohibited articles.

### 5.3 Work Location / Potential Access Requirements

The bulk of this work will be completed at the Contractor's own facility. A site visit is expected for a walk down of the RTUs by the Contractor. The 2750E Office Building is located in the 200 East Area on the Hanford Site located approximately 30 miles north of Richland, Washington.

### 5.4 Site Access and Work Hours

The Hanford Site operates on the standard 8/9's schedule. The standard work day shall consist of nine (9) hours of work between 7:00 AM and 4:30 PM with one-half hour designated as an

unpaid period for lunch. An eight (8) hour work day is substituted on alternate working Fridays, and no work occurs on the alternate non-working Friday.

Installation of the RTUs will be performed on the weekends and other nonworking days (Friday's off and possibly Holidays), due to the fact that the HVAC system will be disabled during installation activities.

## 6.0 MEETINGS / SUBMITTAL

Subcontractor shall participate in all meetings as required by the Buyer's Technical Representative (BTR).

## 7.0 DELIVERABLES AND PERFORMANCE SCHEDULE REQUIREMENTS

### 7.1 Deliverables

The Contractor shall provide the following deliverables by the dates identified:

**Task 1** – Provide specifications and fabrication/delivery schedule for initial 7 RTUs and Optional 4 RTUs by May 17, 2011 or earlier.

**Task 2 –** Deliver first 2 RTUs on August 5, 2011 and the remaining RTUs in pairs every other following Friday (i.e., August 19th, September 2nd, and 1 RTU on September 16th). An operation and maintenance manual that includes a parts list shall be provided with each unit.

**Task 3 –** Contractor shall provide technical support for installation, connection and startup/testing of RTUs over the weekends the RTUs are delivered.

**Optional Task 4 –** Delivery of 4 additional RTUs and technical support starting with 2 RTUs on September 30, 2011 and final 2 RTUs on October 14, 2011.

Acceptance of the RTUs will be based on the following:

- RTUs mounted and connected in accordance with manufacturer's instructions with no leaks.
- Fan, damper and compressor respond correctly to control inputs.
- RTUs respond correctly to thermostat inputs in both heat and cool modes.
- Heating and cooling discharge temperatures are consistent with manufacturer's specifications.
- Refrigerant, oil and compressor amperage are consistent with manufacturer's specifications.

### 7.2 Schedule

Start Date: May 2, 2011
Completion Date: September 18, 2011
Optional Work Completion Date: October 16, 2011

## 8.0 SPECIAL REQUIREMENTS

Electrical Components:

- Unless otherwise approved by MSA, all electrical control panels and electrical equipment [a general term including material, fittings, devices, appliances, luminaries (fixtures), apparatus, and the like, used as a part of, or in connection with, an electrical installation] delivered or brought onto the site in performance of this subcontract must be listed or labeled by an organization currently recognized by OSHA as a nationally recognized testing laboratory (NRTL).

- All electrical equipment installed as part of this Contract must comply with the National Electric Code (NEC), NFPA 70 and where applicable ANSI/IEEE C2 (NESC). The Buyer will inspect electrical equipment and installations for NEC compliance. The Contractor is responsible for notifying the Buyer when installations are available for inspection.

- Electric motors shall be labeled to be in accordance with NEMA MG-1 or listed by an organization currently recognized by OSHA as an NRTL.

- Electrical equipment for which there is no listing category must be evaluated or tested using a method submitted to and approved by the Buyer prior to delivery of the equipment.

Submittals:

Contractor submittals required by this Contract shall be provided in accordance with the following:

- All submittals shall be submitted to the Contract Specialist in accordance with the instructions contained in the Attachment A, Submittal Register.

- The Contractor submittals identified herein and summarized on the Submittal Register shall be submitted by the Contractor using the Contractor Document Submittal Form (CDSF)

- See http://www.hanford.gov/pmm/page.cfm/ContractorForms)

- Contractor information shall be submitted in either hard copy or electronic format (If electronic, it must be viewable using either Microsoft® Windows®, Microsoft® Office, or Adobe® Acrobat® software).

Configuration Management:

The Contractor shall follow MSC Engineering Requirements specified in MSC-RD-1819 when preparing the following:

- New or revised Engineering Drawings to be released into the MSA document control system shall be prepared and entered in accordance with the *CAD and Drawing Development and Control Process for Engineering Drawings*, MSC-PRO-709 and *Facility Modification Package Process*, MSC-PRO-2001.

- New or revised Technical Documents shall be prepared in accordance with *Review and Approval of Technical Documents*, MSC-PRO-8635.

- Design Analysis documentation shall include (1) through (6) below: (1) definition of the objective of the analysis; (2) definition of analysis inputs and their sources; (3) results of literature searches or other applicable background data; (4) identification of assumptions and indication of those that must be verified as the design proceeds; (5) identification of any computer calculation including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification and the bases (or reference thereto) supporting application of the computer program to the specific physical problem; (6) review and approval.

- New or revised Engineering Change Notices or Field Change Notices shall be prepared and submitted in accordance *Engineering Document Change*, MSC-PRO-440 and *Design Change Notice Process*, MSC-PRO-8016.

Reporting Administration

Meetings

General purpose of meetings is for the coordination, control, and direction of the Work. In addition to meetings addressed by this Section, Contractor may be required by other Sections and other Subcontract documents to conduct special-purpose meetings and various safety meetings and briefings.

MSA will issue meeting notices and prepare an agenda and minutes for each meeting addressed in this Section. When applicable, minutes will identify action items, assigned actionees, and due dates.

- KICKOFF MEETING - Before start of the Work, MSA will conduct a conference at a time and Hanford Site location agreed to by Contractor and MSA. Invited attendees will include MSA, Contractor, key lower tier subcontractors and others having an interest in the Work. Purpose of the conference is the coordination of Work start up and familiarization of project participants with the Work and worksite.

- PROGRESS MEETINGS - Every two to four weeks, MSA will conduct a progress meeting at time and Hanford Site location determined by MSA. Invited attendees will include MSA, Contractor and key subcontractors. At the progress meeting, Contractor shall submit a written report showing actual man-hours expended versus planned and scheduled progress versus actual progress giving details of Work completed in relation to the approved schedule, together with a two (2) week "look ahead" which provides details of how the Work will be completed.

- PRE-JOB SAFETY MEETINGS – Prior to supporting or performing any work on the Hanford Site, all Contactor personnel involved shall attend the pre-job safety meeting.

- The purpose of the meetings is the exchange of Work-related information.

Schedule

The Contractor shall develop a schedule in Microsoft Project or Primavera and provide it to the Contract Specialist within two weeks of award. The schedule shall be updated prior to each progress meeting or as requested by the Contract Specialist.

Reports

- PROGRESS REPORT PREPARATION - Prepare a summary progress report each reporting period, show actual progress versus scheduled progress. Scheduled progress is given by baseline project schedule. Show actual progress in the form of percentages completed for activities or resources.

# ATTACHMENT A
# SUBMITTAL REGISTER

**Submittal Register Definitions**

1. Numerical submittal sequence number: Example: 1, 2, 3, 4 … (or organized by topics and project assigned coding structure).

2. Number of Copies and electronic and/or hard copy: Example: E (Electronic only), 6 (Six Hard Copies), or Hard, 1: E, 1 (One Hard Copy, and Electronic).

3. Format: Describes the type of submittal required:

| | |
|---|---|
| **DWG** | An AutoCAD drawing using the Hanford standard formatting (See HNF-14660, *Off-Site Vendor Directions of the Preparation and Control of Engineering Drawings).* |
| **MFC** | Microsoft Format Compatible application (Word, Excel, Access, PowerPoint) |
| **P3** | A Primavera Project Planner schedule |
| **GEN** | General or Open Format/Media |
| **PDF** | Adobe Acrobat (Portable Document Format) |

4. Submittal Type:

**APW** = Approval Required Prior to Work (Buyer must approve the Subcontractor's submittal prior to the Subcontractor being authorized to proceed with any activity/work associated with the submittal).

**AP** = Approval Required (Buyer must approve the Subcontractor's submittal; however, work associated with the submittal may proceed prior to Buyer approval).

**FIO** = For Information Only (the submittal is not subject to review and/or approval).

5. **Vendor Information: Mark Yes if document(s) are VI, otherwise leave blank.**

6. Description / Document Title: Title or general description of the document.

7. Submittal Date: Actual date or number of Calendar Days before or after a milestone that a submittal is due from the Subcontractor: Example: June 1, 2005 or CD + 60 [60 days after Conceptual Design Complete]

**A** Date of Award

| | |
|---|---|
| **CD** | Conceptual Design Complete |
| **PD** | Preliminary Design Complete |
| **FD** | Final Design Complete |
| **M** | Mobilization |
| **SC** | Start of Construction |
| **EC** | End of Construction |

8. Buyer Review Time (Work Days): Example: 3 Days

9. Subcontract Reference: Cross reference to the Subcontract requirement that defines this submittal: Example: SOW 3.1.2.

**Submittal Register:**

The Subcontractor shall meet the required schedule and provide the documents specified in accordance with the following submittals.

| Subcontract Number and Name: | | | | | | Revision: | | |
|---|---|---|---|---|---|---|---|---|
| 1. No. | 2. No. of Copies* (See End Note) | 3. Format | 4. Type | 5. Vendor Information – Mark Yes if VI, Otherwise Leave Blank | 6. Description / Document Title | 7. Submittal Date (Calendar Days) | 8. Buyer Review Time (Work Days) | 9. Subcontract Paragraph or Requirement Reference |
| 1. | E | GEN | APW | | Replacement RTU Specification | A + 10 | 3 Days | SOW 7.1 |
| 2. | E | MFC/P3 | AP | | Fabrication & Delivery Schedule | A + 10 | 3 Days | SOW 7.1 |
| 3. | E | GEN | AP | | Contractor's Electrical License with Certificate of Competence | A + 10 | 3 Days | SOW 5.1 |
| 4. | E | GEN | AP | Yes | Equipment Certifications | EC | 3 Days | SOW 8.0 |
| 5. | E | GEN | AP | Yes | Electrical Inspection / Test Reports | EC | 3 Days | SOW 8.0 |
| 6. | E | GEN | AP | Yes | Operation / Maintenance Manuals | EC | 3 Days | SOW 7.1 |
| | | | | | | | | |

*For electronic submittals, the number of hard copies can be negotiated with the Contract Specialist and approved by the Project Manager.